

## Interview Questions and Answers

### **Interview Question 1: What is the most important aspect to teach in badminton training?**

During the interview, the coach discusses the important aspects of badminton training, prioritizing the teaching of grip as the most crucial element, followed by posture, swing, and step. Training the grip is considered crucial as it enhances racket control and influences the precision of shuttlecock strikes. Since the grip can quickly deteriorate, maintaining it requires consistent focus and should be a continuous process.

When asked about the most important aspect to teach during badminton training, the coach prioritizes posture for beginners. They believe that a correct swing is vital, followed by step and improving shot accuracy. A good swing involves keeping the elbow above shoulder level, while the racket should not deviate far from the side of the body during the swing. Maintaining the correct swing involves generating power from the rotation of the torso, along with the coordinated movement of the arm and wrist. The evaluation of posture and swing focuses on the "contact point," where the racket and shuttlecock meet. For a successful swing, the contact point should be above the right shoulder. The coach also assesses shot accuracy based on whether the shots hit the intended target or clear the net properly. Well-executed shots have noticeable differences in trajectory compared to poorly executed ones. It's common for beginners to have shorter distances when hitting high clears.

Regarding step, the coach emphasizes the positioning of the legs. When executing a swing, the dominant foot should be placed underneath the shuttlecock's expected landing spot. The precise position of the legs is more important than the posture itself. They also emphasize that in a stationary position, the foot that chases the shuttlecock should always be the dominant foot. The recommended sequence for teaching steps is the running step, double step, and split step, with the split step being crucial for quick post-shot preparation.

In summary, the coach emphasizes the importance of grip, posture, swing, and step in badminton training. They believe that grip training should be continuous due to the grip's tendency to loosen. For beginners, posture is the primary focus, followed by improving swing accuracy and shot execution. The coach provides guidance on maintaining proper posture, executing a correct swing, and the sequence of steps. They also mention the differences in trajectory for well-executed and poorly executed shots.

### **Interview Question 2: What is the criterion for evaluating the success of badminton training?**

In the interview, the coach discusses their evaluation criteria for measuring the success of badminton training. They consider multiple factors, including posture, shuttlecock accuracy, shot distance, direction and speed, as well as the impact of strokes. A well-executed training session is characterized by natural steps and accurate strokes, while mistakes should be minimized, and techniques like clears and smashes should be performed with speed and precision.

Posture is evaluated by observing the positioning of the racket and body during the swing. Accuracy is determined by whether the shuttlecock hits the center of the racket and follows the desired trajectory. The power and distance of shots are assessed by looking for a proper impact that allows the shuttlecock to travel a long distance. Consistently hitting the shuttlecock to the opponent's end of the court is also observed during training.

Additionally, the coach mentions that the sound produced during impact can serve as an additional factor for evaluation. They listen for a satisfying "pop" sound when the shuttlecock is hit correctly, indicating a good impact and trajectory. Regarding the ideal point of contact between the shuttlecock and the racket, the coach emphasizes that hitting the middle area of the top 6-8 strings of the racket is crucial for optimal performance. They note that imprecise contact can result in sound distortion and a lack of power transmission. The coach emphasizes that various aspects, including posture, sound, and hitting accuracy, are interconnected and should be considered together when assessing training effectiveness.

When discussing the use of AI in teaching stationary movements like grip, swing, and accurate strokes, the coach suggests that factors such as the number of successful hits, power, and accuracy of strokes could be helpful in evaluation. Shot distance, direction, and the ability to consistently hit the shuttlecock are also considered for assessing training effectiveness. The coach emphasizes the importance of achieving precise shot accuracy in various movements rather than solely focusing on perfecting a single posture. They recommend conducting research and training on different angles, such as clears, under swings, and drive swings, starting from stationary positions. The coach acknowledges that speed is important but mentions the challenge of visually evaluating speed accurately. While video analysis can be helpful in identifying technical and game-related shortcomings, the coach recognizes that it has limitations in providing comprehensive feedback for coaching and training purposes. Instead, the coach suggests that utilizing precise sensing technology through AI

could be beneficial in coaching. This implies that AI-based sensing technology has the potential to provide more accurate and detailed feedback to aid in coaching and training.

#### **Interview Question 3: How do you give feedback to trainees during training?**

During training sessions, the coach employs a variety of feedback methods to guide the students. They utilize verbal feedback, demonstrations, and tactile adjustments interchangeably. For instance, when teaching stationary movements like grip, the coach may first demonstrate the correct posture and then offer tactile feedback by making adjustments to the student's grip. Throughout the training, they provide verbal feedback and also utilize video recordings to review and evaluate progress over multiple days. The coach uses demonstrations to showcase incorrect postures and provides verbal feedback during shuttlecock hits.

Regarding feedback, the coach utilizes a combination of verbal, tactile, and visual methods. Verbal feedback is given during shuttlecock hits, and tactile adjustments are made to the student's arm or grip, particularly for beginners. Demonstrations of correct techniques are provided, and video comparisons are used for self-analysis. The preferred sequence of feedback is verbal cues, followed by physical adjustments, demonstrations, and video analysis.

The coach acknowledges that some students may struggle to comprehend verbal or demonstrative feedback alone. In such cases, they suggest using a shuttlecock launcher machine to practice hitting the shuttlecock while the coach demonstrates the stroke. Alternatively, attaching sensors to the racket and receiving feedback through an app could also be beneficial, although the coach mentions a lack of awareness regarding commercial systems that offer detailed feedback in this manner.

To summarize, the coach delivers feedback through verbal cues, demonstrations, tactile adjustments, and video analysis. They emphasize the importance of integrating different feedback methods to facilitate effective learning and provide personalized guidance based on the specific needs of each student.

#### **Interview Question 4: What is the important data for making an effective badminton shot?**

To achieve effective badminton shots, several factors are important, such as grip, posture, swing, and the moment of impact. The coach emphasizes the significance of maintaining a solid grip to prevent the racket from twisting during the swing. They suggest the use of a tracking system to measure grip shape and pressure, considering it a valuable tool. Visual perception, particularly eye gaze, is emphasized as essential for assessing opponents, the position of the racket face, and the shuttlecock. The coach suggests utilizing eye-tracking technology to track players' gaze data, especially in doubles games. The coaches recommend exposing students with weaker visual perception to faster shots to enhance their adaptability. Furthermore, coaches emphasize the integration of footwork into training sessions to enhance the execution of successful badminton shots. Footwork and its evaluation are also deemed essential, with foot pressure sensors playing a vital role in maintaining balance and movement.

To achieve an effective badminton shot, it is also important to consider the moment of impact. The timing of the impact is influenced by the trajectory of the shuttlecock, requiring players to adjust their technique or swing accordingly. If the shuttlecock is approaching quickly, players should prepare their technique in advance, while a standard swing can be used for shuttlecocks that are farther away. Proper timing and hitting points must also be taken into account for a successful impact. The "hit point" refers to the point where the racket and shuttlecock meet, while "proper timing" refers to determining the appropriate speed of the swing. A well-executed badminton shot occurs when the hitting point is in front of the player's body, which requires optimal power application and coordination of body movements, including the swing and footwork.

The coaches also emphasize the integration of joint sensors into training sessions to enhance the execution of successful badminton shots. Joint sensors are considered useful for assessing movement patterns, and muscle sensors are identified as valuable for evaluating muscle strength and coordination. The coach views wearable sensors as advantageous tools for collecting data during training. They believe that incorporating various sensors could provide more precise and detailed information compared to training without attachments. Additionally, the coach mentions the effectiveness of shooting and analyzing slow-motion videos for comparison. In terms of the target audience, the coach suggests that the system could benefit individuals of all ages and skill levels, including children, the elderly, beginners, and experts.

#### **Interview Question 5: What are your thoughts on the system being developed, which utilizes AI to provide feedback?**

During the interview, the coach expressed their thoughts on the proposed AI-based feedback system for badminton training. They recognized the potential usefulness of such a system, particularly in practical

education settings with a small number of students or in schools. However, the coach also raised concerns about the system being in the concept stage and lacking concrete details.

Regarding the AI-based feedback system, the coach showed optimism about its potential as a promising technology. They noted that unlike other sports like golf, where sensing technology is extensively used, there is currently no comparable system in badminton. However, they highlighted that the movement and optimal judgment of badminton players can vary significantly depending on the game situation, raising concerns about the accuracy of the feedback system.

In summary, the coach acknowledged the potential benefits of an AI-powered feedback system for badminton training but emphasized the importance of addressing challenges related to the ever-changing circumstances of the game.

**Interview Question 6: Among the existing badminton training courses, which one poses the greatest difficulty in terms of teaching or learning? Do you believe that the integration of virtual environment training can address the aforementioned challenges?**

During the interview, the coaches engaged in a discussion regarding the existing challenges encountered in badminton training and the potential advantages associated with virtual environment training. They recognized that beginners often struggle with aspects such as returning smashes due to the demanding nature of reacting swiftly. To address this, the coaches emphasized the significance of eye-hand coordination training and expressed optimism regarding the integration of advanced techniques like eye tracking and a virtual simulation system to enhance training effectiveness. They envisioned an ideal training system within a virtual environment that could surpass the limitations of the physical realm.

One of the challenges highlighted by the coaches was accommodating individuals with varying levels of athletic ability while ensuring engagement and motivation for all participants. In this context, they acknowledged the potential benefits offered by virtual environment training. This approach allows for the customization of shuttlecock speed, ensuring consistent trajectories for all players, and facilitates the recording and review of training sessions. Additionally, the creation of extreme training conditions becomes possible. However, the coaches noted a lack of awareness regarding facilities or coaching systems in their vicinity that utilize virtual environment training.

The coaches expressed a specific need for a virtual environment system, particularly in the realm of defensive training. They envisioned a system that could deliver shots from multiple angles and heights and offer personalized training courses. They stressed the advantage of having a consistent training scenario, as it eliminates the inconsistencies that can arise when relying on human opponents to deliver shots.

However, the coaches expressed reservations about the potential implications of the weight of head-mounted displays (HMDs) on gameplay, particularly during jumping movements. Notwithstanding these concerns, they believe in the advantages offered by virtual training in distinguishing between various shot techniques, such as straight shots, slices, and hairpins, as well as in honing eye-hand coordination to effectively respond to rapid shots. Lastly, they highlighted the challenge of precisely determining the shuttlecock's position, distance, and speed, underscoring the importance of gathering and analyzing such data within a virtual environment system to overcome these obstacles.